REMARKS

Claims 1-8 and 12-14 are presently pending in the application.

Pursuant to the restriction requirement, Applicants hereby affirm the election of Group I, claims 1-8, directed to a method, as previously elected. Accordingly, claims 9-11, directed to a product, have been cancelled, without prejudice to the filing of a divisional application directed to the subject matter thereof.

Claim 1 has been amended to more particularly define the makeup and nature of the planar vacuum panel which is produced and curved according to the presently claimed invention. The amendment to claim 1 is supported, for example, in paragraphs [0005], [0006] and [0018] of the present specification. New claims 12-14 have been added to claim further preferred features of the present invention. Claim 12 is supported, for example, in paragraphs [0006] and [0018], particularly at page 2, lines 2-5 of the specification; claim 13 is supported, for example, in paragraph [0005], particularly at page 1, lines 20-24 of the specification; and claim 14 is supported, for example, in paragraphs [0003], [0004] and [0011] of the specification. Accordingly, no new matter has been added, and entry of the amendments is respectfully requested.

The Examiner has rejected claim 7 under 35 U.S.C. § 112, second paragraph as being indefinite for lack of antecedent basis with respect to "the position" of the third element. While not necessarily agreeing with this rejection, Applicant has essentially adopted the Examiner's suggestion by amending claim 2 to recite that the third element has a position parallel to the two rollers. Accordingly, the rejection is believed to be overcome, and reconsideration and withdrawal are respectfully requested.

The Examiner has rejected claims 1-3 and 7 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,107,649 of Benson et al. ("Benson") in view of U.S. Patent 6,339,946 of Yamashita et al. ("Yamashita"). In addition, the Examiner has rejected the remaining dependent claims 4-6 and 8 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Benson and Yamashita, further in view of one or more additional prior art references of record. In view of the above amendments to claim 1, it is submitted that these rejections are moot or overcome. Therefore, the specific rejections set forth in the Office Action will not be discussed specifically, but the references relied upon by the Examiner and the arguments in the rejections will be discussed below insofar as they may be relevant to the

presently pending claims. In view of the following Remarks, it is submitted that the rejections are improper and inapplicable to the present claims, and reconsideration and withdrawal are therefore respectfully request.

The Examiner contends that Benson discloses a known procedure for producing planar vacuum panels and that the panels can be curved into a cylinder (see Fig. 18). The Examiner acknowledges that Benson does not disclose the method by which the panel is curved, but does disclose that the panel may comprise two adjacent metal sheets. The Examiner notes that Yamashita discloses a method for curving metal sheets by calendering using two rollers and a third element (roller) of equal length placed parallel to the two rollers (see Figs. 7A and 7B).

The Examiner notes that Applicant has admitted that the operation of calendering is well known and applied in the mechanical field for curving metallic plates. The Examiner also notes that Benson discloses planar vacuum panels comprising primarily metal sheets and that these sheets are curved by some process. The Examiner argues that sheets are equivalent to plates and concludes that it would have been obvious to one skilled in the art to produce the curve in the curved panel of Benson using a calendering process carried out by passing the planar vacuum panel between at least two rollers and a third (roller) element of length equal to the rollers and placed parallel to the rollers, as described in Yamashita.

While not disagreeing fundamentally with the Examiner's characterization of Benson, Yamashita and Applicant's admission regarding calendering, Applicant respectfully, but strenuously traverses the Examiner's conclusion that it would have been obvious to curve the panel of Benson using the process of Yamashita, and that such combination would teach the presently claimed invention. As discussed more fully below, Benson, Yamashita and the present application are directed to considerably different panels, sheets or plates, which are by no means equivalent. Therefore, the combination of Benson with Yamashita is improper, and even if proper, does not teach or suggest the presently claimed invention.

Thus, Benson is directed to ultra-thin compact vacuum insulation panels having a thickness of about 2.5 mm (see column 10, lines 49-51 and column 11, lines 49-55). These panels have a rigid filling material, particularly spherical beads or monolithic sheets of glass or ceramic webs which act as spacers between two hard, but bendable, metal wall sheets. The filling material serves only to keep the walls spaced apart, thus avoiding collapsing of the walls

when creating the vacuum. The filling material has no effect on the shape of the panel, and it is the metal sheets which are bent to determine the curvature and shape of the panels.

On the other hand, Yamashita teaches a method and apparatus for forming pipes from relatively thick metal sheets, for example high-tension steel sheets having a thickness of 30 mm (see embodiment 1 at column 12, lines 15-20). These are solid metal sheets which require considerable force to bend into a cylindrical pipe, in contrast to the thin, evacuated panels of Benson having spaces between the metal walls and the filling material of spherical beads or sheets of glass or ceramic webs. Hence, one skilled in the art would expect the use of the rollers of Yamashita to crush panels such as those of Benson, or at least to fracture the spherical beads, sheets of glass or ceramic webs, thereby negating their spacing function.

In contrast to both Benson and Yamashita, the panels of the presently claimed invention have an envelope formed of at least one multi-layer sheet and containing, as filler, inorganic powders and/or porous organic foams. It is this filling material, with features of porosity and/or discontinuity for enhancing the panel evacuation, that dictates the shape, resistance and rigidity of the panel itself. The envelope, which may have barrier sheets with a thickness of not greater than 100 μm and may be made of metal, serves the function of maintaining the impermeability to gases, in order to maintain the vacuum within the evacuated panel (see paragraphs [0005] and [0006] of the present specification).

Even if Benson and Yamashita were properly combinable, the combination would still not teach the presently claimed invention, nor would the results of the presently claimed invention be expected from this combination. Thus, the effect of calendering on the finished panel of the present invention, having powders or polymeric foams as the filling material, could not be foreseen (see paragraph [0013] of the present specification). In the case of polymeric foams forming the filling material, it could not be certain that these would be able to undergo the calendering process without shivering, due to their inherent brittleness, under the actions of compression and bending by the rollers. On the other hand, in the case of filling material comprising powders, while there is no problem of brittleness, it was not obvious that the calendering action could obtain curved structures able to maintain their shape after termination of the calendering operation. This is particularly true when considering extremely thin (not greater than 100 μm) metallic barrier sheets forming the envelope (see present claim 13).

In sum, the combination of the pipe forming method and apparatus of Yamashita with the ultra-thin, but bendable panels of Benson would not render the presently claimed invention obvious, bearing in mind that Benson and Yamashita both involve rigid metal wall materials or thick-walled solid sheets, whereas the rigidity and shape of the panels of the presently claimed invention is given by the filling materials (powders and polymeric foams) whose behavior under a calendering operation was unknown.

While the Examiner contends that one or more of the remaining prior art references cited teaches the use of rigid polyurethane foam or inorganic powders for use in vacuum panels, none of these references contains any teachings of relevance to the issue of curving or bending the panels into a cylindrical shape. Therefore, one skilled in the art would have derived no teaching from these references with respect to the effects of a calendering operation on such panels. Therefore, even combining these additional prior art references with Benson and Yamashita, the effects and results of the presently claimed method were still unforeseen.

In view of the above amendments and Remarks, it is submitted that all of the claims in the application patentably distinguish over the prior art of record. Accordingly, reconsideration and withdrawal of the rejections and an early Notice of Allowance are respectfully solicited.

Respectfully submitted,

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